STATE LANDS COMMISSION

REGULATIONS GOVERNING THE MANAGEMENT OF BIOFOULING ON VESSELS OPERATING IN CALIFORNIA WATERS

INITIAL STATEMENT OF REASONS

TITLE 2, DIVISION 3, CHAPTER 1, ARTICLE 4.8

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of the amended regulation is to establish biofouling management practices, performance standards, recordkeeping and reporting requirements for vessels arriving to a California port or place, as mandated by Public Resources Code (PRC) Section 71204.6. This, in turn, would minimize the transport of nonindigenous species into state waters.

NECESSITY

A nonindigenous species (NIS) is an organism that has been transported by humans to locations beyond its natural range. Once a species becomes established in a new area, it can cause severe adverse economic, ecological, and public health consequences in its new habitat. Vessel biofouling, or the attachment or association of organisms to the wetted portions of a vessel, is recognized as a major mechanism through which aquatic NIS are spread and is believed to be responsible for up to sixty percent of the established NIS along the California coast, including in bays, harbors, and estuaries (Ruiz et al. 2011). California's Marine Invasive Species Act (the Act; Public Resources Code 71200 *et seq.*) includes a provision to remove biofouling from vessels on a regular basis and provides a specific definition for the term regular basis, essentially every five years. This provision was intended as an interim measure until management actions could be identified to adequately satisfy the purpose of the Act, which is to move the state expeditiously toward elimination of the discharge of NIS into the waters of the state. Thus, this definition is set to expire upon adoption of regulations in Article 4.8. Based on the results of studies funded by the California State Lands Commission (Commission) as well as other recent studies from around the world, it was determined that the current statutory requirement does not mandate adequate biofouling management . Additionally, the current provision does not address several of the high-risk activities or vessel surfaces that have been highlighted by the scientific literature as presenting unacceptably elevated risk of NIS release through biofouling.

The biofouling management practices, performance standards, recordkeeping and reporting requirements prescribed by these proposed regulations are necessary to minimize the transport of NIS into the waters of the State of California. Additionally, increased vessel fuel efficiency and decreased air emissions are secondary benefits that would result from biofouling management regulations as proposed in Article 4.8.

TECHNICAL, THEORETICAL, AND/OR EMPIRICAL STUDY, REPORTS, OR DOCUMENTS

Australian Shipowners Association. 2007. Assessment of Introduced Marine Pest Risks Associated with Niche Areas in Commercial Shipping. Final Report. 24 pgs.

Bradsher, K. 2009. Cargo ships treading water off Singapore, waiting for work. New York Times. Published 13 May 2009. Last viewed 28 June 2011. http://www.nytimes.com/2009/05/13/business/global/13ship.html

Coutts, A.D.M. 2002. A biosecurity investigation of a barge in the Marlborough Sounds. Cawthron Report No. 744 prepared for Heli Harvest Limited. 68 pgs.

Coutts, A.D.M., Moore, K.M., Hewitt, C.L. 2003. Ships' sea-chests: an overlooked transfer mechanism for non-indigenous marine species? Marine Pollution Bulletin 46: 1504-1515.

Coutts, A.D.M., Taylor, M.D. 2004. A preliminary investigation of biosecurity risks associated with biofouling on merchant vessels in New Zealand. New Zealand Journal of Marine and Freshwater Research 38: 215-229.

Coutts, A.D.M., Dodgshun, T.J. 2007. The nature and extent of organisms in vessel sea-chests: A protected mechanism for marine bioinvasions. Marine Pollution Bulletin 54: 875-886.

Davidson, I.C., Ruiz, G., Sytsma, M. 2007. The implications of maritime vessel traffic, wetted surface area, and port connectivity for hull-mediated marine bioinvasions on the US West Coast. Final Report prepared for California State Lands Commission: Marine Invasive Species Program. 42 pgs.

Davidson, I.C., McCann, L.D., Fofonoff, P.W., Sytsma, M.D., Ruiz, G.M. 2008a. The potential for hull-mediated species transfers by obsolete ships on their final voyages. Diversity and Distributions 14: 518-529.

Davidson, I.C., McCann, L.D., Sytsma, M.D., Ruiz, G.M. 2008b. Interrupting a multi-species bioinvasion vector: The efficacy of in-water cleaning for removing biofouling on obsolete vessels. Marine Pollution Bulletin 56: 1538-1544.

Davidson, I., Sytsma, M., Ruiz, G. 2009a. Ship fouling: a review of an enduring worldwide vector of nonindigenous species. Final Report prepared for California State Lands Commission: Marine Invasive Species Program. 47 pgs.

Davidson, I.C., Brown, C.W., Sytsma, M.D., Ruiz, G.M. 2009b. The role of containerships as transfer mechanisms of marine biofouling species. Biofouling 25(7): 645-655.

Davidson, I., Ashton, G. Ruiz, G., Scianni, C. 2010a. Biofouling as a vector of marine organisms on the US West Coast: a preliminary evaluation of barges and cruise ships. Final Report prepared for California State Lands Commission. 22 pgs.

Davidson, I., Ashton, G. Ruiz, G. 2010b. Richness, extent, condition, reproductive status and parasitism of fouling communities on commercial vessels. Interim report prepared for California State Lands Commission. 6 pgs.

Floerl, O., Inglis, G.J., Hayden, B.J. 2005. A risk-based predictive tool to prevent accidental introductions of nonindigenous marine species. Environmental Management 35(6): 765-778.

Floerl, O., Coutts, A. 2009. Potential ramifications of the global economic crisis on human-mediated dispersal of marine non-indigenous species. Marine Pollution Bulletin 58(11): 1595-1598.

Floerl, O., Wilkens, S., Inglis, G. 2010. Development of a template for vessel hull inspections and assessment of biosecurity risks to the Kermadec and sub-Antarctic islands regions. NIWA Report CHC2010-086 prepared for Department of Conservation (New Zealand). 58 pgs.

Floerl, Oliver. National Institute of Water and Atmospheric Research (New Zealand). (personal communication, 08/08/2011).

Hewitt, C., Campbell, M. 2010. The relative contribution of vectors to the introduction and translocation of invasive marine species. Final Report prepared for the Australian Department of Agriculture, Fisheries and Forestry. 56 pgs.

Hopkins, G.A., Forrest, B.M. 2010. A preliminary assessment of biofouling and non-indigenous marine species associated with commercial slow-moving vessels arriving in New Zealand. Biofouling 26(5): 613-621.

Hydrex. 2011. The slime factor: shipowners/operators can gain enormous savings through advanced underwater hull maintenance technology. Hydrex White Paper No. 2. http://www.shiphullperformance.org/upload/previewpapers/pdfs/Hydrex_White_Paper_2-Intro.pdf . Last accessed 25 July 2011.

IMO. 2011. International Maritime Organization Sub-Committee on Bulk Liquids and Gases BLG 15/WP.4: Annex 1. Draft Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species. 25 pgs.

Munk, T., Kane, D., Yebra, Y.M. 2009. The effects of corrosion and fouling on the performance of ocean-going vessels: a naval architectural perspective. Pgs 148-176. *In* Advances in marine antifouling coatings and technologies. C. Hellio and D. Yebra, Eds. Woodhead Publishing Limited, Oxford.

National System for the Prevention and Management of Marine Pest Incursions. 2009a. National biofouling management guidelines for commercial vessels. Published by the Australian Department of Agriculture, Fisheries and Forestry. 16 Pgs.

National System for the Prevention and Management of Marine Pest Incursions. 2009b. National biofouling management guidelines for non-trading vessels. Published by the Australian Department of Agriculture, Fisheries and Forestry. 60 Pgs.

Pimentel, D., Zuniga, R., Morrison, D. 2005. Update on the environmental and economic costs associated with alien-invasive species in the United States. Ecological Economics 52: 273-285.

Ruiz, G.M., Fofonoff, P.W., Steves, B., Foss, S.F., Shiba, S.N. 2011. Marine invasion history and vector analysis of California: a hotspot for western North America. Diversity and Distributions 17: 362-373.

Schultz, M.P., Bendick, J.A., Holm, E.R., Hertel, W.M. 2011. Economic impact of biofouling on a naval surface ship. Biofouling 27(1): 87-98.

Scianni, C., Dobroski, N., Takata, L., Falkner, M. 2010. Analysis of extended layups of commercial vessels operating in California waters: Implications for vessel fouling and species introductions. Poster MP45B-02 presented at 2010 Ocean Sciences Meeting. Portland, USA.

Sylvester, F., MacIsaac, H.J. 2010. Is vessel hull fouling an invasion threat to the Great Lakes? Diversity and Distributions 16: 132-143.

Sylvester, F., Kalaci, O., Leung, B., Lacoursie` re-Roussel, A., Murray, C.C., Choi, F.M., Bravo, M.A., Therriault, T.W., MacIsaac, H.J. 2011. Hull fouling as an invasion vector: can simple models explain a complex problem? Journal of Applied Ecology 48: 415-423.

Takata, L., Falkner, M., Gilmore, S. 2006. Commercial vessel fouling in California: Analysis, evaluation, and recommendations to reduce nonindigenous species release from the non-ballast water vector. Final Report prepared for the California State Legislature. 83 pgs.

Takata, L., Dobroski, N., Scianni, C., Falkner, M. 2011. 2011 Biennial report on the California Marine Invasive Species Program. Final Report prepared for the California State Legislature. 136 pgs.

In the preparation of these proposed regulations, the Marine Facilities Division (MFD) of the California State Lands Commission (Commission) formed a cross-interest, multi-disciplinary Technical Advisory Group (TAG) and facilitated discussions over the development of biofouling management strategies. As mandated in PRC Section 71204.6, representatives from the State Water Resources Control Board and the United

States Coast Guard (USCG) were invited to participate. The State Water Resources Control Board actively participated throughout the process while the USCG, because of scheduling difficulties, was involved through informal discussions and comments. The USCG was provided with the meeting notes and drafts of the regulatory language that were distributed to the entire TAG. The following groups were also invited to participate:

- Shipping industry representatives, including ship owners, trade associations, dry dock facilities, in-water cleaning companies, and anti-fouling system manufacturers and distributors. Specifically, the Pacific Merchant Shipping Association, Matson Navigation, Chevron Shipping, Stephan George Associates, Seaspan Marine Corporation, Muldoon Marine Services, BAE Systems San Francisco Ship Repair, Bay Ship & Yacht, Propulsion Dynamics, Inc., Farwest Corrosion Control Company, and International Paints.
- Researchers specializing in biofouling and marine bioinvasions. Specifically, researchers affiliated with the Smithsonian Environmental Research Center, Portland State University, Aquatic Bioinvasions Research and Policy Institute, National Institute for Water and Atmospheric Research (New Zealand, NZ), Biofouling Solutions (Australia), University of New South Wales (NZ), and Limnomar (Germany).
- Non-governmental environmental organizations. Specifically, The Bay Institute and San Francisco Baykeeper.
- Resource-related state, federal, and international government agencies. Specifically, the California Department of Fish and Game, California State Water Resources Control Board, San Francisco Estuary Partnership, Washington Department of Fish and Wildlife, Oregon Department of Environmental Quality, Hawaii Division of Aquatic Resources, US Coast Guard, US Navy, Transport Canada, Fisheries and Oceans Canada, Biosecurity New Zealand, Australia Department of Agriculture, Fisheries and Forestry, and the Ballast Water and Biofouling Working Group within the International Maritime Organization.

Four TAG meeting were held between August 18, 2010 and April 28, 2011. During these meetings, MFD staff facilitated information sharing, discussion, and deliberation over the risks posed to California waters from vessel biofouling and potential management strategies to mitigate those risks. The group also discussed the contents of the Draft Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (IMO 2011) being developed at the International Maritime Organization (IMO), as well as the applicability of several of the provisions within the IMO guidelines for inclusion within the California regulations. Much of the discussion early on was focused on two specific issues of concern which have been highlighted in the scientific literature as presenting a high risk of biofouling accumulation and species transport - biofouling hotspots referred to as “niche areas” and high-risk stochastically moving vessels. Based on the discussion during the first two TAG meetings, MFD staff drafted and distributed regulatory language for consideration during the third meeting. MFD staff took comments that were presented during and following the third meeting and incorporated them into an updated draft that was distributed to the TAG prior to the fourth meeting. Comments and suggestions

collected during and after the fourth meeting were considered in revisions of the draft regulatory language. A new draft was distributed to the TAG for a final review. Several TAG members submitted final comments and these were taken into account during the final revision of the draft regulatory language, submitted here. Copies of the final meeting notes from each of the four TAG meetings can be requested as directed in the Notice of Proposed Regulatory Action.

SMALL BUSINESS IMPACTS

The Commission finds that the adoption of this regulation will not have a significant adverse economic impact on small businesses. None of the businesses that will be governed by the proposed regulation can be considered to be a "small business" as defined in Government Code Section 11342.610.

Title 2, Division 3, Chapter 1, Article 4.8

The following is the initial statement of reasons for each of these regulations. Prior to the explanation for each provision, the text of the regulation is set forth indented and underlined.

Article 4.8. ~~The Collection of Information Relating to Hull Husbandry Practices of Vessels for Control of Marine Invasive Species in Waters of California~~ Biofouling Management Regulations for Vessels Operating in California Waters

SPECIFIC PURPOSE OF THE REGULATION

The purpose of amending the title of Article 4.8 is to align with the intent of the proposed regulations contained within the Article.

NECESSITY

Public Resources Code Section 71204.6 requires the Commission to develop and adopt regulations governing the management of hull fouling on vessels arriving to a California port or place. This provision would amend the title of Article 4.8 to provide a clear and concise description of the proposed regulations contained within. The previous title no longer provides an accurate description of the contents of Article 4.8, thus a more appropriate title is inserted. The proposed amendment will obviate ambiguity and will align the title of Article 4.8 with internationally recognized language.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

~~**Section 2298. Hull Husbandry Reporting Form**~~

~~(a) Section 71205(e) of the Public Resources Code requires the master, owner, operator, agent, or person in charge of a vessel carrying, or capable of carrying, ballast water into the coastal waters of the State to file the "Hull Husbandry Reporting Form" developed by the California State Lands Commission providing information regarding the hull husbandry practices relating to the vessel, within 60 days of receiving a written or electronic request from the Commission.~~

~~(b) The following form "Hull Husbandry Reporting Form" is hereby incorporated by reference and shall be used by the master, owner, operator, agent, or person in charge of a vessel carrying, or capable of carrying, ballast water into the coastal waters of the State to comply with the provisions of Section 71205(e) of the Public Resources Code.~~

~~Authority: Public Resources Code Sections 71201 and 71204.6~~

~~Reference: Public Resources Code Sections 71205(e) and 71205(f)~~

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this action is to amend 2CCR§2298 and renumber it as 2CCR§2298.7, to amend the prescribed submission schedule for the Hull Husbandry Reporting Form.

NECESSITY

PRC Section 71205(e)(1) states that the current reporting requirement for the Hull Husbandry Reporting Form shall continue until the date that the regulations described in PRC Section 71204.6, which are being proposed here, are adopted. Amending this regulation and renumbering it allows the Commission to continue to collect the critical information contained within the reporting form, but will allow for a more appropriate submission schedule for the purposes of verifying compliance with Article 4.8. The required submission of the Hull Husbandry Reporting Form will continue according to the schedule described in 2CCR§2298.7.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.1. Purpose, Applicability, and Date of Implementation.

(a) The purpose of the regulations in Title 2, Division 3, Chapter 1, Article 4.8 of the California Code of Regulations is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state or into waters that may impact the waters of the state, based on the best available technology economically achievable.

SPECIFIC PURPOSE OF THE REGULATION

This specific purpose of this provision is to address the overall intent of the proposed regulations in Article 4.8.

NECESSITY

PRC Section 71201.7 authorizes the Commission to adopt regulations to implement the provisions of the Act. 2CCR§2298.1(a) clearly declares the purpose of the regulations, as stated in PRC Section 71201(d).

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(b) The provisions of Article 4.8 apply to all vessels carrying, or capable of carrying, ballast water, that operate in the waters of the state except those that are exempt under Section 71202 of the Public Resources Code.

SPECIFIC PURPOSE OF THE REGULATION

This specific purpose of this provision is to specify the vessels to which these regulations apply.

NECESSITY

This provision aligns with PRC Sections 71201(a) and 71202, which specify the vessels to which the Act applies. These regulations shall not apply to vessels of the armed forces or vessels on innocent passage.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(c) The provisions of these regulations become effective January 1, 2013.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to make clear the effective date of the regulations.

NECESSITY

PRC Section 71204.6 mandates the Commission adopt these regulations by January 1, 2012. This provision will allow the regulated community ample time to prepare the necessary documentation for compliance. This provision will obviate ambiguity.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.2. Definitions.

Unless the context otherwise requires, the following definitions shall govern the construction of this Article:

(a) "Anti-fouling system" means a coating, paint, surface treatment, surface, or device that is used on a vessel to minimize or prevent attachment or association of biofouling.

(1) "Marine Growth Prevention System (MGPS)" means an anti-fouling system device used to reduce or prevent biofouling accumulation in internal seawater systems and sea chests and can include the use of anodes, injection systems and electrolysis.

(b) "Biofouling," also referred to as hull fouling or marine growth, means the attachment or association of marine organisms to the wetted portions of a vessel or its appurtenances, including, but not limited to, sea chests, propellers, anchors and associated chains, and other niche areas. Biofouling can include microfouling and macrofouling.

(c) "Commission" means the State Lands Commission.

(d) "Division Chief" means the Chief of the Marine Facilities Division of the State Lands Commission or any employee of the Marine Facilities Division authorized by the Chief to act on his or her behalf.

(e) "Extended residency period" means remaining in one port, place or shared waters for ninety days or longer.

(f) "In-water cleaning" means the physical removal of biofouling from the wetted portions of a vessel while the vessel remains in the water.

(g) "In-water inspection" means underwater survey or inspection by divers (including inspections conducted with remotely operated vehicles). Inspections for purposes other than surveying biofouling may be considered opportunities for evaluating biofouling extent.

(h) "In-water treatment" means any method or process that is aimed at sterilizing biofouling from the wetted portions of a vessel while the vessel remains in the water. Sterilization may render organisms inactive, but any hard parts or remnants that remain may serve as suitable substrate to facilitate further biofouling and will still be considered biofouling for the purposes of Article 4.8 unless successful in-water treatment occurs no more than twenty days prior to arrival to a California port or place.

(i) "Macrofouling" means large, distinct multicellular organisms visible to the human eye such as barnacles, tubeworms or fronds of algae.

(j) "Microfouling" means microscopic organisms including, but not limited to, bacteria, single-celled algae and the slimy substances that they produce. Biofouling comprised of only microfouling is commonly referred to as a slime layer.

(k) "Niche area" means an area on a vessel that may be more susceptible to biofouling due to variable hydrodynamic forces, susceptibility to coating system wear or damage, or due to inadequate protection by anti-fouling systems. Examples of niche areas include sea chests, bow thrusters, propeller shafts, inlet gratings, and out-of-water support strips.

(l) "Out-of-water maintenance" means removal of the vessel from the water and into a dry dock or slipway for inspection or maintenance.

(m) "Out-of-water support strips" means sections of the hull that rested on support blocks while the vessel was out of water in a dry dock or slipway.

These areas are typically not cleaned and treated with fresh anti-fouling systems, resulting in reduced anti-fouling protection.

(n) "Percentage cover" means the percentage of the total surface area under examination that is occupied by biofouling.

(o) "Shared waters" means either of the following:

(1) All ports and places in the San Francisco Bay area east of the Golden Gate bridge including the Ports of Stockton and Sacramento; or

(2) The Ports of Los Angeles, Long Beach and the El Segundo marine terminal.

(p) "Vessel" means a vessel of 300 gross registered tons or more.

(q) "Waterline" means the area along the external hull of a vessel where the surface of the water interfaces with the air. The waterline is not a fixed location; its placement is dependent on loading and ballasting operations.

(r) "Wetted portion of a vessel" means all parts of a vessel's hull and structures that are either submerged in water when the vessel is loaded to the deepest permissible legal draft or associated with internal piping structures in contact with water taken onboard.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of 2CCR§2298.2 is to define several key terms that are used throughout the language of the regulations to describe management requirements and regulation applicability. These definitions ensure that the biofouling management practices and requirements described are clear to the shipping industry, and compliance occurs as intended by the regulation.

NECESSITY

Specific terms are used in the regulatory text to describe fundamental components of the regulations. Without clarification, many of these terms can be subject to differing interpretation. These definitions, therefore, are necessary to ensure that these regulations precisely convey the intended interpretation of these specific terms in Article 4.8.

Title 2 of the California Code of Regulations Sections 2298.2(a), 2298.2(a)(1), 2298.2(f), 2298.2(i), 2298.2(j), and 2298.2(k) are either defined directly or slightly modified from the Draft Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (IMO Biofouling Guidelines; IMO 2011) and

are adopted here to maintain international consistency and to maintain the continuity and clarity of Article 4.8. Modifications were made to several of the definitions that came from the IMO Biofouling Guidelines to align with language of the Act. 2CCR Sections 2298.2(b), 2298.2(c), 2298.2(p), and 2298.2(r) are either defined directly or slightly modified from PRC Section 71200 to maintain the consistency and clarity of Article 4.8. Modifications were made to several definitions to align with language of the IMO Biofouling Guidelines to maintain international consistency. 2CCR Sections 2298.2(d) and 2298.2(o) are taken from descriptions included in current Commission regulations and are adopted here to maintain the continuity and clarity of Article 4.8. 2CCR Sections 2298.2(e), 2298.2(m), 2298.2(n), and 2298.2(q) are common terms used in the scientific literature and are adopted here to maintain the continuity and clarity of Article 4.8. 2CCR Sections 2298.2(g), 2298.2(h), and 2298.2(l) are common terms that were discussed during Commission-convened TAG meetings and are adopted here to maintain the continuity and clarity of Article 4.8.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.3. Performance Standards for Biofouling Management.

(a) Performance standards for biofouling management shall be based on the following Level of Fouling Ranking Scale:

(1) Rank 0 (zero) – No visible biofouling. Wetted portions of the vessel are entirely clean with no observable microfouling.

(2) Rank 1 (one) – Microfouling only. Wetted portions of the vessel are partially or entirely covered in microfouling with no observable macrofouling.

(3) Rank 2 (two) – Light biofouling. Wetted portions of the vessel are covered in microfouling with small patches of macrofouling covering no more than five percent of the wetted surface being evaluated.

(4) Rank 3 (three) – Considerable biofouling. Wetted portions of the vessel are covered in microfouling with patchy but clearly visible macrofouling covering greater than five percent but no more than fifteen percent of the wetted surface being evaluated.

(5) Rank 4 (four) – Extensive biofouling. Wetted portions of the vessel are covered in microfouling with abundant macrofouling covering

greater than fifteen percent but no more than forty percent of the wetted surface being evaluated.

(6) Rank 5 (five) – Very heavy biofouling. Wetted portions of the vessel are covered in microfouling with abundant macrofouling assemblages covering greater than forty percent of the wetted surface being evaluated.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to define the specific rankings for biofouling accumulation that the proposed biofouling management performance standards are based on.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state. The provisions of 2CCR§2298.3(a) are necessary to provide the framework for the requirements contained within 2CCR§2298.3 and to ensure that the purpose of the Act, as defined by PRC 71201(d), is satisfied. The proposed Level of Fouling (LoF) ranking scale is necessary to provide specific levels of biofouling accumulation that are easy to determine and document, whether assessment is conducted by divers, remotely operated vehicles, video, or still photographs. This ranking scale is a modified version of a well-known, well-vetted, peer-reviewed scale that has been used widely for research, inspection, and general assessment purposes on a wide variety of vessel types since its introduction in 2005 (Floerl et al. 2005, Floerl et al. 2010, Hopkins and Forrest 2010, Floerl *personal communication* 2011). The proposed scale is also based on organism percent cover, a metric currently used by many in-water maintenance contractors hired by shipping companies to complete underwater hull husbandry and inspection.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(b) For new vessels delivered on or after January 1, 2013, for existing vessels beginning with completion of the first out-of-water maintenance on or after January 1, 2013, and for all vessels subject to 2CCR§2298.6, the master,

owner, operator, or person in charge of a vessel arriving to a California port or place shall:

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to define the implementation timeline for the performance standards for biofouling management.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations, by January 1, 2012, governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. This section would allow for a phased-in compliance schedule for the performance standards for biofouling management, based on a vessel's delivery as new or first out-of-water maintenance after the proposed effective date of Article 4.8. The phased-in implementation would allow vessel owners and operators to take advantage of a vessel's scheduled out-of-water maintenance or construction to implement the vessel-specific Biofouling Management Plan required under Article 4.8. The schedule is also intended to provide vessels an opportunity to conduct activities often completed when a vessel is out of water, such as the selection, installation, or maintenance of appropriate anti-fouling systems, without having to arrange for an unscheduled out-of-water event. This section would also specify that vessels subject to 2CCR§2298.6 would be subject to the proposed performance standards for biofouling management upon the date that Article 4.8 enters into effect, regardless of the date of delivery or out-of-water maintenance.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(1) Maintain or clean the vessel so that upon arrival, the following niche areas are at or below Rank 2 (two) on the Level of Fouling Ranking Scale described in 2CCR§2298.3(a):

(A) Sea chests and sea chest gratings;

(B) Bow and stern thrusters, including gratings;

(C) Fin Stabilizers, if present;

(D) Out-of-water support strips;

(E) Propeller and propeller shaft; and

(F) Rudder;

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to define a specific performance standard for the amount of acceptable biofouling for six high-risk vessel niche areas.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

Niche areas are wetted surfaces of a vessel that may experience variable hydrodynamic forces, may be susceptible to coating system wear or damage, or may be inadequately protected by anti-fouling systems. Over the past decade, the scientific literature has repeatedly indicated that niche areas are highly susceptible to accumulating biofouling and therefore present a high level of NIS introduction risk (Coutts et al. 2003, Coutts and Taylor 2004, Coutts and Dodgshun 2007, Australian Shipowners Association 2007, Davidson et al. 2009b, Davidson et al. 2010a, Sylvester and MacIsaac 2010). This topic was addressed in detail during several of the TAG meetings, with scientists outlining research results supporting these findings.

Most vessel owners are incentivized to minimize biofouling on the flat portions of the hull due to the increased drag and associated increased fuel costs it causes. However, most niche areas do not increase hydrodynamic drag or reduce vessel performance and are often overlooked when conducting biofouling maintenance for the purpose of improving fuel efficiency. This lack of attention often leads to niche areas that can become heavily fouled, beyond the biofouling management performance standard proposed here (LoF Rank 2 (two)). Basic hull husbandry practices and targeted use of appropriate anti-fouling systems can be utilized to maintain these niche areas at an acceptable level of biofouling, as defined by this provision.

It would be more protective of California waters to set a LoF Rank 1 (one) for these niche areas rather than the proposed performance standard (LoF 2 (two)). The proposed performance standard would allow for macrofouling covering up to and including five percent of the surface area under investigation. Even for niche areas that represent a small fraction of the total amount of a vessel's wetted surfaces, five percent of biological cover will represent a large number of organisms and elevated risk of NIS introduction. However, given the placement of niche areas on a vessel, and their unusual water flow patterns or reduced anti-fouling protection, they are susceptible to increased amounts of biofouling if not properly managed. MFD staff, in consultation

with the TAG, believes that setting the performance standard for these specific niche areas at a LoF Rank 2 (two) is more achievable because even properly managed niche areas may be difficult to maintain to a level completely devoid of macrofouling. The proposed performance standard is also superior to one requiring a LoF Rank 3 (three), as the latter would allow up to and including fifteen percent of biological cover and would therefore not provide an acceptable level of protection for California waters. Additionally, a performance standard utilizing a LOF Rank 3 (three) will not represent an improvement over the status quo for many vessels. This is especially true given that niche areas sampled on vessels in California have been shown to harbor dozens of different species and tens of thousands of individual organisms, many of which are reproductively active (i.e. carrying egg masses or larvae) and are harboring parasites (Davidson et al. 2010a, Davidson et al. 2010b).

Proper attention and use of anti-fouling systems will enable vessel owners and operators to maintain niche areas at a LoF Rank 2 (two) or below, in compliance with this provision. Therefore this provision is necessary to define an acceptable as well as achievable level of cleanliness to which certain high-risk niche areas would need to be maintained or cleaned. This section is also necessary to focus attention and encourage improved management on vessel surfaces that pose the greatest risk of biofouling accumulation and nonindigenous species introduction.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

> (2) Maintain or clean the vessel so that upon arrival, the wetted portions of the vessel, except those niche areas described in 2CCR§2298.3(b)(1), are at or below Rank 1 (one) on the Level of Fouling Ranking Scale described in 2CCR§2298.3(a). Filamentous or turf algae at the waterline, including one meter above and one meter below the waterline, shall be excluded from this Level of Fouling Rank; and

SPECIFIC PURPOSE OF THE REGULATION

The purpose of this provision is to define a specific performance standard for the amount of acceptable biofouling for all of the wetted surfaces of a vessel, except the niche areas specified in 2CCR§2298.3(b)(1).

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the

waters of the state. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

A vessel's total wetted surface area represents the potential colonizable area for biofouling to accumulate, and is analogous to ballast water discharge volume as an estimate of the potential NIS release if left unmanaged. Between July 2003 and June 2005, the states of California, Oregon, and Washington received a combined total of 29,282 vessel arrivals and the average wetted surface area of each of these vessels was 9070.4 square meters (Davidson et al. 2007), slightly more than two American football fields side by side (8918.7 square meters). The vessel surfaces addressed by this provision represent the vast majority of the wetted surface area of a vessel (excludes niche areas). Therefore, biofouling covering even five percent, essentially the LoF Rank 2 (two), could result in a very large number of organisms. This is an unacceptable amount of biofouling and would represent an extremely high risk of NIS introduction.

This provision is therefore necessary to define an acceptable level of cleanliness that the vessel's wetted surfaces, excluding the niche areas specified in 2CCR§2298.3(b)(1), would need to be maintained or cleaned to. Most vessels operating in California and elsewhere are already regularly maintained to a Rank 1 (one) for economic reasons (i.e. because of the increase in hydrodynamic drag and the decrease in fuel efficiency tied to greater biofouling accumulation). Therefore, the proposed regulation codifies the current level of cleanliness maintained by a large portion of the fleet and is necessary to require the remaining vessels owners and operators who don't already adequately manage their biofouling to do so.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(3) Maintain documentation that the niche areas described in 2CCR§2298.3(b)(1) and other wetted portions of the vessel have been evaluated, according to the following schedule, to ensure compliance with Subparts (1) and (2) of this section upon arrival to a California port or place:

(A) No longer than six months prior to arrival to a California port or place; or

(B) No longer than twelve months prior to arrival to a California port or place if:

(i) The vessel was delivered as new within the twelve months prior to arrival; or

(ii) The vessel underwent full application of one or more anti-fouling coatings during out-of-water maintenance and was refloated within the twelve months prior to arrival.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to require documentation confirming that a vessel's wetted surfaces have been evaluated at appropriate time intervals to determine if a vessel will be in compliance with the proposed performance standards for biofouling management upon arrival to a California port or place.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act.

This provision will allow the vessel Master to determine whether the vessel will be in compliance with the proposed performance standards for biofouling management when the vessel arrives to a California port or place. Regular evaluation of biofouling extent at appropriate time intervals will indicate if the vessel will arrive in compliance or whether the vessel will need to undergo in-water cleaning or maintenance prior to arrival to achieve compliance. This provision was deemed necessary by industry members of the TAG so a Master could determine the likelihood of compliance upon arrival. Regular evaluation of biofouling extent is also necessary to allow Commission Marine Safety personnel to conduct proper inspections for compliance with the proposed performance standards.

The schedule is intended to align with routine maintenance, including propeller polishing, in-water cleaning or inspection, out-of-water maintenance, or any other instance that would allow for biofouling evaluation. The proposed schedule also allows for an extended amount of time (a total of twelve months) for vessels that have been recently delivered as new or that have received a fresh application of anti-fouling coating(s) during out-of-water maintenance, as these vessels are less susceptible to biofouling accumulation than vessels with older anti-fouling coatings. .

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(C) If an evaluation cannot take place due to safety concerns for the vessel, its crew, contractor, or inspector, a safety postponement of one month may be claimed. If the safety postponement is claimed, documentation certified by the master shall be included in the Biofouling Record Book described in 2CCR§2298.5 and shall, upon request, be made available to the commission for inspection. Safety postponement documentation must include:

(i) Port, country, and date of postponed evaluation;

(ii) Specific reasons for the safety postponement (e.g. elevated current speed, decreased visibility);

(iii) Port, country, and dates of the two preceding port calls, prior to the postponed evaluation;

(iv) Port, country, and date of rescheduled evaluation;

(v) Signature of vessel master certifying the safety postponement.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to provide a mechanism for a postponement of up to one month for the evaluation of biofouling extent, in the event that an evaluation may jeopardize the safety of the vessel or its crew, contractor, or inspector.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. PRC Section 71203 declares that the master, operator, or person in charge of a vessel is responsible for the safety of the vessel, its crew, and its passengers. Ensuring an option for a safety postponement is necessary to ensure that safety is not jeopardized in order to meet the provisions of Article 4.8

Biofouling extent evaluations are often performed while the vessel remains in the water. If divers are utilized to perform these operations, their safety and the safety of the vessel are of utmost concern. If conditions exist (e.g. fast currents, low visibility) in a specific port that would present a safety risk to the diver or vessel and crew, then a reasonable extension of the required evaluation is necessary. There may be occasions where conditions are unpredictable, thus necessitating a safety postponement.

Often, certain port environments may be *predictably* unsuitable for diving and underwater evaluation. In these cases, proper planning will allow the vessel owner, operator, or master to perform underwater maintenance (e.g. propeller polishing) and biofouling evaluations at ports prior to travelling to a port that may be predictably unsuitable for diving. Therefore, language requiring information about the two preceding port calls is necessary to determine if a claimed safety postponement is warranted. Prior port information is also necessary for the Commission to evaluate the usefulness of this provision, including the postponement duration.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.4. Biofouling Management Plan.

The master, owner, operator, or person in charge of a vessel carrying, or capable of carrying, ballast water that operates in the waters of the state shall:

(a) Maintain a biofouling management plan that was prepared specifically for the vessel and that shall, upon request, be made available to the commission for inspection and review. This plan shall be specific to each vessel and shall provide a description of the biofouling management strategy for the vessel that is sufficiently detailed to allow a master or other appropriate ship's officer or crew member serving on that vessel to understand and follow the biofouling management strategy. This plan shall, at a minimum, include a:

(1) Copy of the vessel’s General Arrangement, including diagram;

(2) Copy of the vessel’s docking plan from the two most recent out-of-water maintenance operations;

(3) List of the vessel’s niche areas that are susceptible to biofouling;

(4) Description of anti-fouling systems used, including those used for niche areas. Description shall include, at a minimum:

(A) Manufacturer name, model name, and product number;

(B) Recommended operating conditions suitable for the antifouling system;

(5) Description of the vessel's normal operating profile used to determine the performance specifications of the antifouling systems, including but not limited to:

(A) Operating speeds;

(B) Percent of time underway at sea compared with percent of time berthed, anchored, moored, or adrift;

(C) Operating areas or trading routes;

(D) Planned duration between anti-fouling coating renewals; and

(6) Schedule of planned inspections, repairs, maintenance and renewal of antifouling systems;

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to prescribe the framework for a vessel-specific plan that will include effective procedures for biofouling management to facilitate the vessel's compliance with the proposed regulations included in Article 4.8. The Biofouling Management Plan is a component of the IMO Biofouling Guidelines; therefore, this regulation is also intended to maintain international consistency.

The specific purpose of subparts (a)(1), (a)(2), and (a)(3) is to detail and provide diagrams of the wetted surfaces of the vessel that would be susceptible to biofouling accumulation. These provisions would also require documentation of the biofouling hotspots, or niche areas, on a vessel that carry a greater likelihood of accumulating biofouling.

The specific purpose of subpart (a)(4) is to document the type and location of anti-fouling systems that are used on specific wetted surfaces of the vessel as well as the operating conditions that are appropriate for the anti-fouling systems utilized.

The specific purpose of subpart (a)(5) is to document a vessel's normal operating profile, including certain biofouling accumulation risk factors, within the Biofouling Management Plan.

The specific purpose of subpart (a)(6) is to include information on the upkeep and maintenance schedules of the antifouling systems in use on the vessel.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the

authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

Implementation of an effective biofouling management regime is critical for minimizing the transfer of nonindigenous species. The Biofouling Management Plan is necessary to detail the vessel-specific measures that constitute the vessel's biofouling management regime. The Biofouling Management Plan is also necessary to serve as a central location for the vessel's management strategy to allow for easy access for the Master and crew as well as for the Commission's Marine Safety personnel to verify compliance with the provisions of Article 4.8. During the technical advisory group meetings held to develop the proposed regulations, staff was encouraged to maintain consistency with the biofouling guidelines in development at the IMO, which includes a Biofouling Management Plan. This regulation will ensure that international consistency is maintained. Additionally, this regulation will codify the recording and maintenance of many biofouling management practices already required by PRC Section 71205(f).

Biofouling will cause increased hydrodynamic drag while a vessel is underway, which reduces fuel efficiency and increases operating costs. Typically, biofouling on the hull is managed to reduce drag and operating costs. However, biofouling in certain niche areas does not increase drag significantly, and these areas are therefore often overlooked during a vessel's typical management and hull husbandry activities. In addition, because niche areas are often sheltered from the harsh hydrodynamic environment of the exposed hull, they provide a favorable habitat for the accumulation of biofouling organisms. Therefore, subparts (a)(1), (a)(2), and (a)(3) are necessary to focus management attention on these highly susceptible niche areas. These provisions are also necessary to facilitate identification of susceptible niche areas that will require increased management attention during in-water inspection, treatment, or cleaning operations, as well as the during inspection by Commission's Marine Safety personnel.

Anti-fouling systems, including anti-fouling coatings and marine growth prevention systems, are the primary tools for preventing biofouling accumulation. Subpart (a)(4) is necessary to keep centralized records of the anti-fouling systems that are used on the various wetted surfaces of a vessel. Evaluating the types of anti-fouling systems in use, combined with operating profiles and voyage characteristics of the vessel, will provide valuable insight in to a vessel's likely compliance with the regulations contained within Article 4.8. Recording this information in the Biofouling Management Plan will also facilitate completion and submission of the mandatory reporting form described in 2CCR§2298.7 of Article 4.8 and will facilitate verification of submitted information during inspections by the Commission's Marine Safety personnel.

The information required by subpart (a)(5) is believed to influence biofouling accumulation and NIS transport. Documenting this information in a central location is necessary to enable a ship owner or operator to select the most appropriate anti-fouling systems, based on the vessel's normal operating profile. It is also necessary to

document this information in the Biofouling Management Plan in order to facilitate risk assessment during inspection by the Commission's Marine Safety personnel.

The information included in subpart (a)(6) is necessary to properly evaluate whether the antifouling systems installed on a vessel are maintained in a condition so they are capable of working as designed. This information is necessary for Commission Marine Safety personnel to conduct onboard risk assessments to determine if additional inspection is necessary. This information will also be necessary to enable the vessel Master and crew to understand and track the required upkeep necessary to maintain properly functioning antifouling systems.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(b) Train, and maintain records of training for, the master, operator, person in charge, and those members of the crew who have responsibilities under the vessel's biofouling management plan, on the application of biofouling management and treatment procedures, as well as procedures described in this section, in order to minimize other releases of nonindigenous species from vessels.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to provide a mechanism for the appropriate personnel to be properly trained on the application of the vessel's biofouling management plan and procedures. This provision is also intended to maintain international consistency with the IMO Biofouling Guidelines.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

This provision is necessary to ensure that the vessel-specific biofouling management plan is properly administered by the appropriate persons. Proper application of the Biofouling Management Plan and associated treatment procedures are necessary to ensure compliance with the proposed regulations and to minimize the risk of NIS

introduction into California. This requirement is similar to, and modeled after, the requirement within PRC Section 71204(i) for training and maintenance of training records for a vessel's ballast water management plan.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.5. Biofouling Record Book.

The master, owner, operator, or person in charge of a vessel carrying, or capable of carrying, ballast water that operates in the waters of the state shall maintain a biofouling record book to be retained onboard the vessel. This record book must record details of all inspections and biofouling management measures undertaken on the vessel, including, at a minimum:

(a) A description of the anti-fouling systems installed or applied, including, but not limited to:

(1) Specific location on vessel where installed or applied, including niche areas;

(A) For MGPS, indicate whether installed in sea chest or strainer;

(2) Date installed or applied;

(3) Dates and description of planned or unplanned maintenance;

(4) Dates and description of any occurrences where the system was malfunctioning or out of service;

(5) Where applicable, instructions on its operation, including frequency and duration of use; and

(6) For anti-fouling coatings, a copy of the International Maritime Organization's International Anti-fouling System Certificate;

(b) Information from the most recent out-of-water maintenance, which shall include, at a minimum, the following:

(1) Dates and geographic location of dry docking or slipping;

(2) Description of the measures and methods taken to remove biofouling or to renew or repair the anti-fouling system;

(3) Date the vessel was re-floated;

(c) Copies of reports from all in-water inspections or surveys undertaken since the most recent out-of-water maintenance. Reports shall include, at a minimum, the following:

(1) Dates and locations of in-water inspections or surveys;

(2) Description of the areas of the vessel inspected or surveyed for biofouling;

(3) Methods used for inspection or survey (e.g. divers, remotely operated vehicles);

(4) Description of biofouling samples collected, if any;

(5) Description of the observed percentage cover of biofouling on the hull and niche areas described in 2CCR§2298.3(b);

(6) Photographs (which may include DVD of video or closed-circuit television) of the wetted surfaces of the hull and niche areas described in 2CCR§2298.3(b);

(7) Indication of whether any corrective action taken to address observed biofouling was necessary;

(d) Copies of reports from all in-water treatment, in-water cleaning and propeller polishing activities undertaken since the most recent out-of-water maintenance. Reports shall include, at a minimum, the following:

(1) Dates and locations of in-water treatment, in-water cleaning and propeller polishing;

(2) Description of the areas of the vessel that are treated or cleaned;

(3) Description of reason(s) for treatment, cleaning or polishing;

(4) Description of the method of treatment or cleaning used (e.g. number of brushes, brush type);

(5) If applicable, description of debris capture and/or waste disposal method;

(6) Description of the post-cleaning percentage cover of biofouling on the hull and niche areas described in 2CCR§2298.3(b);

(7) Post-cleaning photographs (which may include DVD of video or closed-circuit television) of the wetted surfaces of the hull and niche areas described in 2CCR§2298.3(b);

(e) Details of inspection and maintenance of sea chests and internal seawater systems that have been undertaken since the most recent out-of-water maintenance. Details shall include, but are not limited to, the following:

(1) Dates of inspection or maintenance;

(2) Description of reason(s) for inspection or maintenance;

(3) Description of maintenance performed, and whether system is operating normally post-maintenance;

(4) Corrective action taken to address observed biofouling and any reported blockages;

(f) Description of any occurrences since the most recent out-of-water maintenance when the vessel has been operating outside of its normal operating profile described in the biofouling management plan; and

(g) Description of any occurrences since the most recent out-of-water maintenance when the vessel remained in the same port, place or shared waters for ten days or more. Details shall include, at a minimum:

(1) Geographic location where vessel remained for ten days or more;

(2) Date of arrival to port, place, or shared waters where vessel remained for ten days or more;

(3) Date of departure from port, place, or shared waters where vessel remained for ten days or more;

(4) Any biofouling maintenance undertaken prior to, during and following ten day (or more) residency period.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to prescribe the framework for a vessel-specific record book to house documents related to the vessel's use of anti-fouling systems and biofouling management actions. The Biofouling Record Book is modeled

after a similar component of the IMO Biofouling Guidelines. Therefore, this provision is also intended to maintain international consistency.

The purpose of subpart (a) is to document specific information about the vessel's anti-fouling systems, including: type, location, age, maintenance, use, and appropriate certification.

The purpose of subpart (b) is to document specific information about the vessel's out-of-water maintenance, either in a dry dock or in a slipway.

The purpose of subparts (c) and (d) is to document specific information about the vessel's in-water biofouling management actions, including inspections, treatment, cleaning, and propeller polishing.

The purpose of subpart (e) is to document specific information about the maintenance and management of the more problematic niche areas that provide habitat for elevated biofouling accumulation - the vessel's sea chests and internal seawater systems.

The specific purpose of subpart (f) is to document occurrences where the vessel was operating in a manner inconsistent with the profile used to determine the appropriate anti-fouling systems, as well as the vessel's overall biofouling management strategy.

The specific purpose of subpart (g) is to document detailed information about any occurrences of the vessel remaining in one geographical location for ten or more days.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

The Biofouling Record Book is necessary to consolidate in a centralized location all of the documentation associated with the vessel's biofouling management actions. While the Biofouling Management Plan described in 2CCR§2298.4 outlines the vessel's biofouling management strategies and vessel-specific characteristics that influence biofouling accumulation, the Record Book described here records important details about the specific activities and maintenance undertaken by vessel operators or crew to carry out the management strategies. Including all of this information in a central location will facilitate onboard inspections by Commission Marine Safety personnel, facilitate proper completion and submission of the Commission's Hull Husbandry Reporting Form by the vessel Master and crew to comply with 2CCR§2298.7, and will enable the Master to determine if the vessel will be in compliance with the proposed

performance standards for biofouling management upon arrival to a California port or place. Additionally, this regulation will codify the recording and maintenance of many biofouling management practices already required by PRC Section 71205(f).

The information required in subpart (a) is necessary to properly evaluate the frequency of use and likely efficacy of the vessel's anti-fouling systems. While the information kept in the Biofouling Management Plan will list the types of anti-fouling systems installed or applied on the vessel, the information required in the Biofouling Record Book will detail more specific information about anti-fouling system use and maintenance, including the regions of the vessel the systems are installed or applied to, dates of installation, maintenance, or malfunction, and information on their regular use and certification, if applicable. This information will inform the vessel's Master and crew, as well as the Commission's Marine Safety personnel, of the specifications of these important biofouling management tools. Evaluation of this information will facilitate the risk assessment performed during the onboard inspection.

The information required in subpart (b) is necessary to inform the vessel Master and crew, as well as the Commission's Marine Safety personnel, of the specific types of biofouling management activities that occurred during the out-of-water maintenance as well as the amount of time that has elapsed since the maintenance occurred. Out-of-water maintenance is periodically required through the International Convention for the Safety of Life at Sea as well as through classification societies for insurance purposes. During this maintenance, biofouling is removed from the wetted surfaces of the vessel and anti-fouling systems are installed, applied, renewed, or maintained. The required information detailing out-of-water maintenance is one of the documents necessary to verify compliance with the performance standards for biofouling management described in 2CCR§2298.3 of Article 4.8. Commission Marine Safety personnel will need to verify this information in order to determine compliance with Article 4.8.

The information required in subparts (c) and (d) is necessary to inform the vessel Master and crew, as well as the Commission's Marine Safety personnel, of the activities that occurred during in-water biofouling management activities, as well as the amount of time that has elapsed since these activities have occurred. These records will also document information on the levels and locations of biofouling present before and after in-water inspections or cleanings, thus providing an indication to the Master, crew and the Commission's Marine Safety personnel of the likelihood that the vessel meets the requirements of 2CCR Sections 2298.3(b)(1) and 2298.3(b)(2). In-water inspections are required periodically by classification societies for insurance purposes. In addition, in-water inspection, treatment, cleaning, and propeller polishing are tools that vessel owners or operators utilize to evaluate and remove, if necessary, biofouling from the wetted surfaces of the vessel. The documentation required will allow the Commission's Marine Safety personnel to verify compliance with the proposed performance standards for biofouling management described in 2CCR§2298.3.

The sea chests and internal seawater systems are two of the vessel's most important niche areas, or biofouling hotspots. They are also extremely important for engine

cooling and ballasting operations, and even moderate biofouling can affect vessel performance. Sea chests are niche areas specified in the performance standard described in 2CCR§2298.3(b)(1) and, together with their associated internal seawater systems, are the only niche areas that have highly effective anti-fouling systems designed specifically for them. Proper maintenance and operation of these anti-fouling systems is critical to reduce biofouling accumulation in this biofouling hotspot. The information required in subpart (e) is necessary for the Commission's Marine Safety personnel to evaluate whether the sea chests are functioning at optimal levels and whether the sea chests are maintained or cleaned to a satisfactory level for compliance with proposed performance standards.

The vessel's normal operating profile is used to determine the vessel's biofouling management strategy, including the types of anti-fouling systems that are used. The performance and efficacy of most antifouling systems is dependent on variables associated with the vessel's operation, such as travelling speed, the amount of time the vessel is stationary versus underway, and the geographic location of operation. Thus, selection of the most effective antifouling systems is strongly dependent on a vessel's normal operational profile. When the vessel operates outside of this profile, it may increase the likelihood that the anti-fouling systems, and the biofouling management strategies, are not effective. Recording the information required in subpart (f) is necessary to allow the vessel's Master and crew, as well as the Commission's Marine Safety personnel, to identify activities that may increase biofouling extent and may cause a vessel to be out of compliance with the proposed performance standards for biofouling management identified in Article 4.8.

Remaining stationary for prolonged periods of time is considered to be one of the most important risk factors for vessel biofouling accumulation. The requirement in subpart (g) to document information relating to all residency periods of ten days or greater is necessary to allow the Commission to assess the risk of biofouling accumulation and likelihood of compliance with the proposed performance standards. The risk assessment is more informative when details about the geographic location, the dates, and the maintenance applied are included. This information has been collected on the Commission's mandatory Hull Husbandry Reporting Form submitted annually by every vessel in the California fleet since 2008. Submission of this reporting form is proposed to continue as part of these regulations (see 2CCR§2298.7). Therefore the documentation of this information in the Biofouling Record Book will facilitate the completion and submission of the reporting form. The data collected from the Commission's Hull Husbandry Reporting Form suggests that 53.3% of the fleet in 2009, and 61.4% percent of the fleet in 2008, did not experience a port call of 10 days of more. Therefore, the requirement included in subpart (g) would only be applicable to the minority of vessels in the California fleet that experience these prolonged ten day or greater residency periods. Data collected from the Hull Husbandry Reporting Form in 2010 and 2011 have either not yet been analyzed or are not yet complete and therefore are not presented here.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.6. Requirements for Vessels with Extended Residency Periods.

The master, owner, operator, or person in charge of a vessel arriving to a California port or place after an extended residency period must ensure that the vessel completes one of the following prior to arrival:

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to require vessels that experience the high-risk activity of an extended residency period, previously defined as remaining in one geographical location for ninety days or longer, to present documentation that it has been inspected or cleaned to indicate that the vessel will be in compliance with the proposed performance standards upon arrival to a California port or place.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

Remaining stationary for prolonged periods of time is considered to be one of the most important risk factors for vessel biofouling accumulation. Increased length of the residency period results in increased biofouling accumulation (Coutts 2002, Coutts and Taylor 2004, Davidson et al. 2008), and poses an increased risk of transferring NIS into California. This topic was addressed in detail during several of the TAG meetings, with scientists outlining research results supporting the need to manage vessels with frequent and/or prolonged periods of inactivity.

In light of the dramatic increase in the number of vessels going into long-term layup/inactivity as a result of the global economic downturn of the past several years (Bradsher 2009, Floerl and Coutts 2009, Scianni et al. 2010), the TAG agreed that including a provision to specifically identify and target these extreme high-risk vessels was necessary. The extended residency period threshold, defined as ninety days, ensures that this requirement captures the extreme high-risk vessels and ensures that

they are properly managed prior to arriving to California. This ninety-day threshold is also necessary to limit this requirement only to those extreme high-risk vessels. Commission-collected data from 2009 indicates that 1.7% of the fleet experienced a residency period of ninety days or greater since the vessel's most recent out-of-water maintenance. Therefore, this requirement will only impact the small minority of extreme high-risk vessels.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(a) Undergo in-water inspection following the extended residency period to ensure compliance with the performance standards described in 2CCR§2298.3 upon arrival to a California port or place.

(1) If in-water inspection reveals that performance standards described in 2CCR§2298.3 will not be met, then vessel must satisfy either subdivision (b) or subdivision (c) of this section;

(2) In-water inspection report must be kept in Biofouling Record Book described in 2CCR§2298.4 and must include, at a minimum, all of the following for the vessel hull and each of the niche areas described in 2CCR§2298.3(b):

(A) Written description of the percentage cover of biofouling;

(B) Photographs (may include DVD of video or closed-circuit television) of the wetted surfaces; or

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this provision is to require documentation for the in-water inspection of a vessel that has remained in one geographic location for ninety days or greater in order to verify compliance with the proposed performance standards upon arrival to a California port or place. This provision specifies which types of information are required to be included in the Biofouling Record Book.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The

proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

Vessels that remain in one location for ninety days or greater will be required to provide verification that the proposed performance standards will be met upon arrival to California. This provision describes one of the options available to verify compliance. If in-water inspection indicates that the vessel will be in compliance with the proposed performance standards upon arrival, an in-water inspection report with prescribed information will be sufficient for verification purposes. If in-water inspection reveals that the vessel will not be in compliance with the proposed performance standards upon arrival, one of the remaining options will be required to provide verification of compliance upon arrival to California port or place.

The requirements for a written description of the percent cover of biofouling and photographs for the vessel hull and each of the specific niche areas described are necessary for the vessel's Master and crew and the Commission's Marine Safety personnel to properly evaluate compliance with the proposed requirements.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

(b) Undergo in-water cleaning following the extended residency period to ensure compliance with the performance standards described in 2CCR§2298.3 upon arrival to a California port or place.

(1) In-water cleaning report must be kept in Biofouling Record Book described in 2CCR§2298.4 and must include, at a minimum, all of the following for the vessel hull and each of the niche areas described in 2CCR§2298.3(b):

(A) Written description of the percentage cover of biofouling post-cleaning;

(B) Photographs (which may include DVD of video or closed-circuit television) of the wetted surfaces post-cleaning; or

(c) Undergo out-of-water dry docking or slipping and removal of biofouling from the niche areas and other wetted portions of the vessel following the extended residency period to ensure compliance with the performance standards described in 2CCR§2298.3 upon arrival to a California port or place.

(1) Documentation from the out-of-water maintenance facility must be kept in Biofouling Record Book described in 2CCR§2298.5 and must include, at a minimum, all of the following for the vessel hull and each of the niche areas described in 2CCR§2298.3(b):

(A) Written description of the percentage cover of biofouling post-cleaning;

(B) Photographs (which may include video or closed-circuit television) of the wetted surfaces post-cleaning.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of these provisions is to require documentation for any in-water cleaning or out-of-water maintenance for a vessel that has remained in one geographic location for ninety days or greater in order to verify compliance with the proposed performance standards upon arrival to a California port or place. This provision specifies which types of information are required to be included in the Biofouling Record Book.

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

Vessels that remain in one location for ninety days or greater will be required to provide verification that the proposed performance standards will be met upon arrival to California. The provisions described here are necessary because they describe the two maintenance options available to bring the vessel into compliance and ensure that the vessel will be compliant upon arrival to a California port or place.

Requirements for a written description of the percent cover of biofouling and photographs of the vessel hull and each of the specific niche areas described in 2CCR§2298.3(b)(1) are necessary for the vessel's Master and crew and the Commission's Marine Safety personnel to properly evaluate compliance with the proposed requirements.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.7. Hull Husbandry Reporting Form.

The form "Hull Husbandry Reporting Form (Revised August 18, 2011)" is hereby incorporated by reference. The master, owner, operator, agent or person in charge of a vessel carrying, or capable of carrying, ballast water into the coastal waters of the State shall submit the form "Hull Husbandry Reporting Form (Revised August 18, 2011)" to the Commission in written or electronic form twenty-four hours in advance of the first arrival of each calendar year to a California port or place of call.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to prescribe the use of, and submission requirements for, the reporting form "Hull Husbandry Reporting Form."

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

PRC Section 71205(f) describes the requirement to maintain the information contained within the Hull Husbandry Reporting Form. PRC Section 71205(e) has required mandatory annual submission of the Hull Husbandry Reporting Form since 2008. The submission schedule required by PRC Section 71205(e) will expire upon the adoption of the regulations included in the amended Article 4.8, thus the submission schedule is amended as proposed here. The information collected through this form is essential for determining potential risks of transferring NIS into California waters. The information collected with this form will allow the Commission to perform per-vessel risk assessments to inform the selection of vessels for boarding and inspection, as well as to determine compliance with several provisions of Article 4.8. The requirement for submission twenty-four hours in advance of arrival of the first port or place of call each calendar year is necessary to allow the Commission lead time to perform risk assessment prior to a vessel's arrival so boarding and inspection of high-risk vessels may occur upon arrival.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS

The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.

Section 2298.8. Alternatives.

(a) Petitions for Alternatives.

(1) Any person subject to these regulations may submit a petition to the Division Chief for alternatives to the requirements of Article 4.8 as applied to the petitioner.

(2) All petitions for alternatives must be submitted in writing. A petition may be in any form, but it must contain all data and information necessary to evaluate its merits in order to fulfill the purposes of these regulations.

(3) All petitions for alternatives must be submitted and must receive approval prior to the vessel's arrival to a California port or place.

(b) Response to Petitions.

(1) The Division Chief shall respond in writing to any petition for alternatives within thirty days of receipt of the petition.

(c) Approval of Alternatives.

(1) The Division Chief may approve any proposed alternatives to the requirements of Article 4.8 if he or she determines that the proposed alternatives will fulfill the purpose of these regulations as outlined in 2CCR§2298.1(a).

(2) If the Division Chief approves any proposed alternatives under this section, a letter of approval shall be issued to the petitioner setting forth the findings upon which the approval is based.

(3) The Division Chief may withdraw the letter of approval of any alternative requirements at any time if he or she finds that the person or persons subject to these regulations have not complied with the approved alternative requirements.

(4) Withdrawal of a letter of approval under this section shall be effective upon receipt by the petitioner of written notification of the withdrawal from the Division Chief.

SPECIFIC PURPOSE OF THE REGULATION

The specific purpose of this regulation is to provide a mechanism for requests for alternatives to the requirements of Article 4.8. This regulation prescribes the petition process, including approval or withdrawal of a petition by the Division Chief of the Commission's Marine Facility Division. Alternatives proposed in petitions must fulfill the purpose of the regulation in 2CCR§2298.1(a).

NECESSITY

PRC Section 71204.6 requires the Commission to adopt regulations governing the management of hull fouling on vessels arriving to a California port or place to protect the waters of the state. Additionally, PRC Section 71201.7 grants the Commission the authority to adopt regulations necessary to implement the provisions of the Act. The proposed regulations must satisfy the specific purpose of the Act, as described in PRC Section 71201(d), which is to move the state expeditiously toward elimination of the discharge of nonindigenous species into the waters of the state.

There may be instances where portions of the proposed regulations would present a risk to the safety of the vessel, its crew, or a contractor. This regulation is necessary to allow for the petition of alternatives that would still meet the purpose of Article 4.8.

ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON AFFECTED PRIVATE PERSONS
The Commission Staff has determined that there are no alternatives considered which would be more effective in carrying out the purpose of the proposed regulations or would be as effective and less burdensome to affected private persons.